at Modena); lecture-courses at universities appear to have depended altogether on the initiative of the professor (Sergi at Messina in 1878-9, Ferrari at Bologna). The first independent university laboratory was opened in Florence, 1903-4, by F. De Sarlo.

In 1905 the fifth international congress was held at Rome. A direct result was the establishment of three chairs of experimental psychology: S. De Sanctis was put in charge of the laboratory at Rome, F. Kiesow of that at Turin, and C. Colucci received the call to Naples. In 1908 a laboratory of scientific pedagogy at Crevalcore was transformed into a laboratory of pure and applied psychology and, as a communal institute of Milan, placed under the direction of Z. Treves. At the director's death in 1911 this laboratory seems to have declined; his personally owned apparatus were bequeathed to De Sanctis' laboratory at Rome,—where, curiously enough, the psychological section of the Anthropological Institute was still maintained under Sergi's guidance. In 1912 a psychological laboratory, named in honor of Treves, was started by Gonzales and Corberi in connection with the provincial hospital of Milan at Mombello. Finally, Saffiotti was called in 1918 to Palermo, and V. Benussi, apparently in the same year, to Padua.

The *Revista di Psicologia* was started by Ferrari in 1905; it is the organ of the *Società Italiana di Psicologia,* which took shape in 1911. In 1920 appeared the first numbers of the *Archivio Italiano di Psicologia,* edited by F. Kiesow of Turin and A. Gemelli, a pupil of Külpe and Kiesow, now in charge of the laboratory of the Instituto Nazionale Medico-Pedagogico at Milan. Volumes of experimental studies have been issued from Reggio Emilia, Rome, Florence and Turin. E. B. T.

THE PSYCHOPHYSIOLOGY OF THE CONDEMNED

Dr. L. Gualino, director of an Italian war-hospital, has published a paper on the psychophysiological characters of soldiers condemned to be shot for breach of discipline.[1] Pulse is accelerated to 100 at the moment of sentence; is thereafter variable; and sinks to 60 at the place of execution. Sweating is profuse, but a thermal anaesthesia prevents reaction to cold. Salivary secretion is lessened; the voice roughens or fails; tears cannot be shed. Breathing is of the Sikorsky type: the thorax is violently filled or emptied, and the succeeding respiratory movements are superficial and hardly if at all perceptible. There is no impulse to defecate, and no tendency to frequent and scanty urination; a vesical anaesthesia leads, however, to unnoticed overflow of the bladder's contents. The most characteristic physical symptom is a paresis or paralysis of the lower limbs. The face assumes a set, mask-like expression. The pupil alternates between dilatation and normality; in both conditions it reacts normally to light. There is trembling, but (the writer thinks) no true tremor; muscular contractions appear irregularly at various parts of the body, and are probably due to "multiple fibrillary myoclonias." Reflexes are never normal; they may be hightened or diminished. The various modes of general sensitivity show a loss of acuity which may reach actual anaesthesia. The specific sensitivities are rather heightened than impaired.

[1] Psicofisiologia dei fucilandi: Annotazione obbiettive, *Rivista di Psicologia,* xvi, 1920, 42 ff. The editor, Professor G. C. Ferrari, adds a brief note (101 ff.) entitled Psicologia dei moribondi.

The mental functions, on the other hand, maintain their integrity to the very end. Attention is lively, prompt and well-sustained. Memory is fully efficient. Thought, conception, judgment, reasoning present no change, qualitative or quantitative. The insistent idea is not that of death, or of what is to follow death, or of injustice, but of the unimaginable pain that may attend the moment of dying; the condemned are eager for fact or argument that may reassure them. Nor are the emotions blunted. The principal egoistic emotion displayed, apart from the overshadowing fear, is vanity; the condemned wish to make a good appearance, and are annoyed at the invading paresis; the chief altruistic emotion is a strong and variously directed sympathy. There is little sign of religious emotion. The religion of the condemned, like that of soldiers in general, is strictly utilitarian; their religious images are made, as circumstances suggest, the object of prayer or cursing; they seldom avail themselves voluntarily of the ministrations of the chaplain; and though at last they usually agree to receive the sacraments, this is due more to outside pressure and to the vague notion of a safeguard of the future than to any real religious feeling.

In his conclusion the author points out how far removed from the truth is the common belief that the condemned man is, to all intents, dead before he mounts the scaffold or takes his place on the field of execution. In natural death, it seems that the brain first succumbs, and that spinal paralysis follows later; in these cases of violent death, on the contrary, the cord appears to renounce its functions while the brain remains intact. E. B. T.

LOCOMOTION OF INSECTS

The locomotion of insects when walking with their six legs intact is roughly by three legs at a time, one set of three supporting the body tripod-wise while the other three are advancing. For example, while the right fore leg, the left middle leg and the right hind leg form the tripod of support, the left fore leg, the right middle leg and the left hind leg are advanced; then the last three form the support while the first three are advanced, and so on in alternation. This fact has long been known. Von Buddenbrock set himself to discover what happens when some of the legs (say the middle leg on each side) are removed by accident or amputation, using a walking-stick insect for his experiments.[1] If the original leg-partnerships were to continue, the insect would have a gait like a pacer, moving the fore and hind legs on the same side at the same time. As a matter of fact this is not what happens; but instead it uses the left fore leg with the right hind leg and the right fore leg with the left hind leg after the manner of a trotter, and does so whenever a leg on each side is removed, irrespective of their relation to each other. Removal of a single leg makes no change in the plan of locomotion.

The change of leg-usage when two legs are lacking is advantageous for an insect that must move about back-downward on the underside of leaves and the like, and raises the interesting question how the change is brought about. Is it due to the operation of some general center of locomotor control; is it caused in a purely mechanical way by the changed distribution of the weight of the insect upon the legs

[1] v. Buddenbrock: Der Rhythmus der Schreitbewegungen der Stabheuschrecke, Dyxippus; mit 2 Abbildungen. Biologisches Zentralblatt, Bd. 41, Nr. 1, Januar 1921, pp. 41-48.